# Express5800/320Ma:
# Software Installation and Configuration Guide

NEC Solutions (America), Inc.
NR002w

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# Preface

## Purpose of This Manual

The *Express5800/320Ma: Software Installation and Configuration Guide* documents how to install and configure Express5800/320Ma software.

## Audience

This manual is intended for system administrators who install and configure Express5800/320Ma software.

## Notation Conventions

This document uses the notation conventions described in this section.

### Warnings, Cautions, and Notes

Warnings, cautions, and notes provide special information and have the following meanings:

**WARNING**

**A warning indicates a situation where failure to take or avoid a specified action could cause bodily harm or loss of life.**

**CAUTION**

A caution indicates a situation where failure to take or avoid a specified action could damage a hardware device, program, system, or data.

NOTE

A note provides important information about the operation of an Express5800/320Ma system.

### Typographical Conventions

The following typographical conventions are used in Express5800/320Ma documents:

- The bold font emphasizes words in text or indicates text that you type, the name of a screen object, or the name of a programming element. For example:

  **Before** handling or replacing a system component, make sure that you are properly grounded by using a grounded wrist strap.

  In the **System Properties** dialog box, click the **Hardware** tab.

  Call the **RegisterDeviceNotification** function.

- The italic font introduces new terms and indicates programming and command-line arguments that the user defines. For example:

  Many hardware components are *customer-replaceable units* (CRUs), which can be replaced on-site by system administrators with minimal training or tools.

  **copy** *filename1 filename2*

  Pass a pointer for the *NotificationFilter* parameter.

- The monospace font indicates sample program code and output, including message text. For example:

  ```
  #include <iostream.h>
  ```

  ```
  The operation completed successfully.
  ```

## Getting Help

If you have a technical question about Express5800/320Ma hardware or software, try these online resources first:

- **Online support from NEC Technical Support.** You can find the latest technical information about an Express5800/320Ma through online product support at the NEC Technical Support Web site:

  http://support.necsam.com/servers/

- **Online product support for Microsoft® products**. Your primary source for support is the computer manufacturer who provided your software, or an authorized Microsoft Support Provider. You can also find the latest technical information about Microsoft Windows® and other Microsoft products through online product support at the Microsoft Help and Support Web site:

  http://support.microsoft.com/

If you are unable to resolve your questions with the help available at these online sites, and the Express5800/320Ma system is covered by a service agreement, please contact NEC Technical Support (866-269-1239).

## Notices

- All regulatory notices are provided in the site planning guide for your system.
- Although this guide documents modem functionality, modems are not available for all systems. Ask your sales representative about modem availability.
- ActiveService Network (ASN) is not currently available but may be ordered in the future.

# Chapter 1
# Overview of Software Installation, Upgrade, and Configuration

Before you install, configure, or upgrade your system, see the following information:


- “Acronyms” on page 1-2
- “Installation-Related Documents” on page 1-3


For information about installing, configuring, and upgrading Express5800/320Ma software, see the following:


- Chapter 2, “Installing Express5800/320Ma System Software”
- Chapter 3, “Configuring Software”
- Chapter 4, “Performing the Reload Procedure”
- Chapter 5, “Performing the Remote Management Installation Procedure”
- Chapter 6, “Updating Firmware”
- Chapter 7, “Upgrading Express5800/320Ma Software”
- Appendix A, “Connecting a UPS to an Express5800/320Ma System”

# Acronyms

Table 1-1 lists the acronyms used to describe tasks for installing, configuring, and upgrading Express5800/320Ma system software.

**Table 1-1. Acronyms Used**

| Acronym | Expanded Name |
|---|---|
| APC® | American Power Conversion |
| ASN | ActiveService® Network |
| BMC | Baseboard management controller |
| EULA | End-user licensing agreement |
| ftSMC | ftServer Management Console |
| Gbps | Gigabits per second |
| IPL | Initial Program Load |
| JRE | Java™ 2 Runtime Environment |
| Mbps | Megabits per second |
| MIB | SNMP Management Information Base |
| MMC | Microsoft Management Console |
| MOF | Managed Object Format |
| NTFS | NT file system |
| PCNS | PowerChute® Network Shutdown |
| PDU | Power distribution unit |
| RDR | Rapid Disk Resync (disk mirroring) |
| RMI | Remote Management Installation |
| SAM | Software Availability Manager |
| SNMP | Simple Network Management Protocol |
| UPS | Uninterruptible power supply |
| VTM | Virtual Technician Module |

# Installation-Related Documents

Table 1-2 lists documents that you may need while you install and configure Express5800/320Ma software. You can use a Web browser to read these documents from the Express5800/320Ma ExpressBuilder CD (2 of 2). The documents are installed from the Express5800/320Ma ExpressBuilder CD (2 of 2), as described by the following:

- On Express5800/320Ma systems, by the IPL procedure
- On remote management systems, by the RMI procedure

**Table 1-2. Documents Used During Installation and Configuration**

| Document | Description |
|---|---|
| *Express5800/320Ma Virtual Technician Module User's Guide* | Explains how to configure and use a VTM console to remotely control, monitor, and troubleshoot an Express5800/320Ma system. |
| *Release Notes: Express5800/320Ma* | Provides information about a specific release of Express5800/320Ma software, related hardware, and documentation updates and errata. |
| *Express5800/320Ma Software Availability Manager User's Guide* | Explains how to configure and use the Express5800/320Ma Software Availability Manager software. |
| *Express5800/320Ma: System Administrator's Guide* | Describes how to administer and troubleshoot Express5800/320Ma systems. Explains how to configure and use the ftServer Management Console (ftSMC). |
| *Express5800/320Ma: PCI Adapter Guide* | Describes the PCI adapters that Express5800/320Ma systems support. |
| *Express5800/320Ma: Site Planning Guide* | Describes how to prepare a site for the installation of Express5800/320Ma systems. |
| *Express5800/320Ma: Installation Guide* | Describes how to install Express5800/320Ma. |
| *Express5800/320Ma: Operation and Maintenance Guide* | Explains how to operate, troubleshoot, and service Express5800/320Ma. |
| *Express5800/320Ma: Technical Reference Guide* | Provides technical reference information for Express5800/320Ma systems. |
| *Network Management Card Installation Manual* | A document available from American Power Conversion (APC) that describes how to set up the UPS. |

# Chapter 2
# Installing Express5800/320Ma System Software

If the operating system has been installed by the manufacturer, a Microsoft Certificate of Authenticity is placed on the system equipment label at the rear of the system. In this case, supply the information in Table 2-1 and perform only the procedure described in “The Post-IPL Procedure” on page 2-9.

If the operating system has not been installed by the manufacturer, review the information in “Overview of the IPL and Post-IPL Procedures” on page 2-2 and “IPL Considerations” on page 2-2, supply the information in Table 2-1, and perform the procedure described in “Performing the IPL Procedure” on page 2-6, followed by the post-IPL procedure.

NOTES

1. The IPL procedure allows you to perform a single IPL and then duplicate the system disk for bulk deployment. If you are using a duplicate system disk, perform only the post-IPL procedure described in “The Post-IPL Procedure” on page 2-9.
2. Software installation services are available. Contact NEC Technical Support for details.

# Overview of the IPL and Post-IPL Procedures

The IPL procedure installs the following:

- Microsoft Windows Server 2003

  On Express5800/320Ma systems, Windows Server 2003 Enterprise Edition and Service Pack 1 is installed and supported.

- Express5800/320Ma, including ftServer drivers, ftServer Manager, and Express5800/320Ma Software Availability Manager (SAM)
- Java™ Runtime Environment (JRE) for using the Virtual Technician Module (VTM) console
- Operating system files that are customized for the systems
- System documentation

# IPL Considerations

- Neither the IPL procedure nor the post-IPL procedure mirrors the system disk. To achieve fault tolerance, mirror it after the installation. See the *Express5800/320Ma: Software Installation and Configuration Guide* for instructions.
- Do not attempt to use your Windows Server CD alone to install or reinstall Windows Server. Instead, use the NEC ExpressBuilder CD (1 of 2) to perform the IPL procedure. The NEC ExpressBuilder CD (1 of 2) contains customized drivers that are necessary to run an Express5800/320Ma system properly.
- The Post Installation Check, which runs after the IPL, automatically creates a file named Version*date*.plt (*date* represents the file creation time and date) that contains information about the files that were installed. NEC Technical Support can use this file to analyze installation problems. This information file is created in the following folder:

  %ProgramFiles%\Stratus\CustomerService\VersionReports

- The Post Installation Check tool, which also runs after the IPL, creates a file named Postcheck*_yyyy_mm_dd_hh_mm*.txt in the %ProgramFiles%\Stratus\Customerservice\Installcheck folder on the system drive. In the file name, *yyyy_mm_dd_hh_mm* indicates the year, month, date, hour, and minute when the file was created.

The Post Installation Check tool verifies that:

- Express5800/320Ma applications are properly installed.
- Correct versions of drivers are properly installed.
- The correct, compiled Managed Object Format (MOF) files are present.
- Express5800/320Ma services are installed and started, except for services that run only at system startup.
- Third-party applications are properly installed.
- Microsoft hotfixes are installed.

- The IPL procedure takes approximately two and one-half hours to complete.

## Mini-Setup Worksheet

Before you start the IPL or Mini-Setup procedure, record site-specific information on the worksheet shown in Table 2-1, which lists the information requested by the IPL and Mini-Setup prompts.

For more information about the settings listed in Table 2-1, see the Windows documentation.

**Table 2-1. Mini-Setup Worksheet**

| Setting | Description | Entry |
|---|---|---|
| Regional settings | The first Customize button changes general settings (such as location or language); the appearance of dates, time, numbers, and currency; and the input locale (the keyboard's input language).<br><br>The second Customize button changes only the input locale. | N/A |
| User name and organization | A *user name* is the name of the person who is performing the installation.<br><br>An *organization* (an optional field) is the organization to which a copy of Windows is licensed. | **User name:**<br><br>**Organization:** |

**Table 2-1. Mini-Setup Worksheet** *(Continued)*

| Setting | Description | Entry |
|---|---|---|
| Microsoft product key | If Windows Server 2003 was installed by the manufacturer, you do not need a product key.<br><br>The product key is located on the Windows Server 2003 CD case or on the cover of Windows Server 2003 documentation. | **Product key:** |
| Licensing mode | Windows Server 2003 supports two licensing modes: per seat and per server.<br><br>If you choose **Per server**, each concurrent connection to the server requires a separate Client Access License. If you select this mode, you **can change** the mode to the Per Device or Per User mode later.<br><br>If you choose **Per Device or Per User**, each computer that accesses the server requires a separate Client Access License. If you select this mode, you **cannot change** the mode to the per-server mode later. | **Check one:**<br><br>**Per server:** _____ **(Default value)**<br><br>**Per Device or Per User** ____ |
| System name and administrator password | A *system name* is a unique computer name that differs from other computer, workgroup, or domain names on your network. Mini-Setup suggests a system name, but you can change the name. Ask your network administrator for name recommendations.<br><br>An *administrator password* is the password for the Administrator account that Windows automatically creates during installation. It is the logon password for the user whose logon name is Administrator. Record this password. | **System name:**<br><br>**Administrator password:** |
| Date and time settings | Use this dialog box to set the date, time, and time zone. | N/A |

**Table 2-1. Mini-Setup Worksheet** *(Continued)*

| Setting | Description | Entry |
|---|---|---|
| Networking settings | If you have a simple peer-to-peer network, you may want to click **Typical settings**.<br><br>To configure advanced network options or add more services during Mini-Setup, click **Custom settings**. If you click **Custom settings**, another dialog box prompts you for more information.<br><br>**Note:** To join a domain, first set your networking settings appropriately. Ask your network administrator for the correct networking settings. | **Check one:**<br><br>**Typical settings:** _____<br><br>**Custom settings:** _____ |
| Workgroup or computer domain | You must join either a workgroup or a domain.<br><br>A *workgroup* is one or more computers with the same workgroup name. To join a workgroup, provide a new workgroup name, or use the workgroup name that Windows suggests during Mini-Setup.<br><br>A *domain* is a group of computers that are part of a network, are managed by a domain controller, and share a common directory database. Joining a domain requires a computer account in the domain you want to join. To join a domain during Mini-Setup, provide the name of an existing domain, your user name, and your password. | **Workgroup or domain:** |

# Performing the IPL Procedure

The IPL procedure takes approximately two and one-half (2.5) hours. System configuration procedures take additional time. See the *Express5800/320Ma: Software Installation and Configuration Guide* for information about these configuration procedures.

**Checklist: The IPL Procedure**

- ❏ Prepare for the IPL procedure as described in "Preparing for the IPL Procedure" on page 2-6.
- ❏ Perform the IPL procedure as described in "Performing the IPL Procedure" on page 2-6.

## Preparing for the IPL Procedure

1. Make sure you have the following media:
   - NEC ExpressBuilder CD (1 of 2)
   - NEC ExpressBuilder CD (2 of 2)
   - One of the following:
     – For an Express5800/320Ma system, Microsoft Windows Server 2003, Enterprise Edition CD with Service Pack 1

     NOTE

     If you are supplying your own Windows Server 2003 CD, make sure it contains only one operating system. If the CD contains more than one operating system, the IPL procedure does not execute correctly.

2. Connect a monitor and keyboard to the system, either directly or through a keyboard, video, mouse switch.
3. Make sure that the hard disk on which you want to install Express5800/320Ma is inserted in one of the following locations:
   – In a rack-mountable system, in the bottom-most slot in the top enclosure
   – In a pedestal system, in the right-most slot in the enclosure on the left
4. Unlatch all other disks. After the IPL, you insert and mirror the disks.

## Performing the IPL Procedure

1. If the system is powered on, remove power before starting the IPL. To remove power from the system, shut down Windows.
2. If any storage enclosures are connected to the system, disconnect them.
3. Turn on power to the system.
   a. Verify that the system power cords are plugged into live AC power outlets. If the system is connected to power distribution units (PDUs), make sure that the PDUs are plugged into live AC power outlets and are turned on.
   b. Turn on power to the monitor.
   c. Turn on system power: Press the power button on the enclosure whose power button LED is green-lit.
4. Insert the NEC ExpressBuilder CD (1 of 2) in the CD-ROM drive of the enclosure whose power button LED is green-lit.

5. Disable boot monitoring and, optionally, Option ROM for PCI slots.
   a. When the system is booting and the progress bar has started to fill, press F2 to enter the BIOS Setup program. An *Entering Setup* message appears, but several minutes may elapse before the BIOS Setup program runs.
   b. Use the RIGHT ARROW key to select the **Advanced** tab.
   c. To disable boot monitoring, use the DOWN ARROW key to select **Monitoring Configuration**. Press ENTER. Use the DOWN ARROW key to select **OS Boot Monitoring**. Use the PLUS SIGN (+) key to change the value to **Disabled**. Press ESC.
   d. If the system contains any PCI adapters that contain option ROMs, the system boots faster if you disable Option ROM for the PCI slots that contain the adapters. To disable Option ROM, select **Monitoring Configuration** on the **Advanced** tab. Select each slot that contains an adapter and use the PLUS SIGN (+) key to change the values to **Disabled**.
   e. Press F10. In the **Setup Confirmation** dialog box, select **Yes** and press ENTER to save the new settings and exit from the BIOS Setup program.

      The system reboots after you exit from the BIOS Setup program.

      NOTE

      Disabling boot monitoring prevents several unnecessary restarts of the system during the IPL process.

6. Make sure theNEC ExpressBuilder CD (1 of 2) is inserted in the CD-ROM drive whose power button LED is green-lit.
7. During the next few minutes, the following normally appear:
   - A message: *Initial Program Load*
   - A Windows XP splash screen
   - A black screen, then a blue screen, with no text
   - A Fault Tolerant Server splash screen
8. In the **Start Express5800 series system software IPL** dialog box, accept the default setting, **Run the Initial Program Load for Express5800/320Ma software Release 4.1.*x*.*x***, and click **Next**.

   NOTES

   1. The dialog box advises you to disable boot monitoring. If you already disabled boot monitoring as described in step 5, you do not need to do so again.
   2. The **Open a session in the Windows Preinstallation Environment** option opens a WinPE command shell.

3. Do not use a customized CD except with the supervision of the NEC Technical Support.

9. Follow the prompts to specify the size of the partition that you want the IPL to create.

   Specify a value within the range of the minimum and maximum allowed partition sizes for your disk, as shown in the dialog box.

   NOTE

   If you plan to use a disk-management tool to configure the system disk as a dynamic disk, ensure that the partition size that you create now is the size that you want. To extend the partition size after the disk becomes dynamic, you may need to purchase and use a third-party tool.

10. Follow the prompts to complete the preinstallation steps of the IPL.
11. If **Windows Setup** displays the message *`The Setup script file does not contain a valid Product ID`*, click **OK**. Then, in the **Your Product Key** dialog box, enter the product key you specified in Table 2-1 and click **Next**.
12. In the **Preinstallation Completed** dialog box, click **Restart**.

    NOTE

    If the system is left unattended for an extended period of time after this point, an **Unlock Computer** dialog box may prompt you to log in. You do not need to provide a password to log in and continue the installation process.

13. For the next few minutes, Windows Setup copies files and starts installation of Windows updates (hotfixes), restarting the computer at several points.
14. When the **Windows Server Post-Setup Security Updates** dialog box appears, configure the system to download, but not automatically install, hotfixes. Use the following guidelines to install the hotfixes:
    - You can install Microsoft hotfixes that are released in a Security Bulletin as a group of security-related hotfixes.
    - Obtain validation from NEC Solutions (America), Inc. before you install other types of hotfixes, such as Microsoft patches that fix a particular problem.

    See the *Express5800/320Ma ActiveService Network Configuration Guide* for more information about installing hotfixes.

15. Follow the instructions in the **Windows Setup Completed** dialog box.

16. A few minutes may pass before the system restarts and the post-IPL procedure starts.

# The Post-IPL Procedure

Perform the post-IPL procedure if Windows and Express5800/320Ma were preinstalled on your system, or if you have just performed the IPL procedure.

**Checklist: Performing the Post-IPL Procedure**

- ❏ If you have not already done so, complete the Mini-Setup Worksheet. See "Mini-Setup Worksheet" on page 2-3.
- ❏ Respond to Mini-Setup prompts. See "Responding to Mini-Setup Prompts" on page 2-9.
- ❏ Complete the post-IPL procedure. See "Completing the Post-IPL Procedure" on page 2-10.

NOTE

Before proceeding, check for the latest information about your system and Express5800/320Ma in the *Release Notes: Express5800/320Ma* on the NEC ExpressBuilder CD (2 of 2) shipped with your system.

## Responding to Mini-Setup Prompts

1. If you have just performed the IPL procedure, go to step 2. Otherwise:
   a. Insert the disk that contains the boot partition in the following location:
      – In a rack-mountable system, in the bottom-most slot in the top enclosure
      – In a pedestal system, in the enclosure on the left, in its right-most slot
   b. Turn on the system, if you have not already done so. See "Performing the IPL Procedure" on page 2-6.
2. If the **Welcome to the Windows Setup Wizard** starts, respond to the Mini-Setup prompts. If prompted by Mini-Setup, enter the license key again. (You are not prompted for the license key if Windows was installed by the manufacturer.) Use the information you provided in Table 2-1 to respond to these prompts.

When Mini-Setup is finished, the system reboots.

NOTE

If your system contains VTMs, the mouse and keyboard may appear unresponsive at some point after the system

has restarted. This is normal behavior while the virtual mouse and keyboard are found by the operating system as new hardware. Responsiveness returns after a short period of time.

## Completing the Post-IPL Procedure

1. When the **Welcome to Windows** dialog box appears, press CTRL+ALT+DELETE.
2. Log on by using the Administrator account and password you entered during Mini-Setup and click **OK**.
3. Two separate end-user licensing agreements (EULAs) appear:
   a. Select the appropriate language for the Express5800/320Ma EULA. If you display the EULA, review it, and then click **Close**. Click **I accept the terms of the license agreement** if you agree to the terms, and then click **Continue**.
   b. Select whether you want to display the Microsoft Quick-Fix Engineering EULA Addendum. If you display the EULA, review it, and then click **Close**. Click **I accept the terms of the license agreement** if you agree to the terms, and then click **Continue**.
4. The installation programs for third-party software run. Be sure to install the following software, as NEC Solutions (America), Inc. does not support systems that lack this software.
   - When the Java Runtime Environment Wizard starts, follow the prompts to install JRE, accept the license agreement and the default settings in the remaining dialog boxes. (The JRE Setup dialog box may become partially obscured by the progress bars. Click the dialog box to bring it forward.)

   **CAUTION**

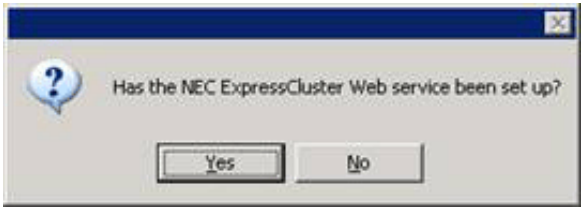
   If the **Setup Complete** dialog box for any third-party software appears, click **No, I will restart my computer later**, and then click **Finish**. If you restart the system now, the installation does not complete properly.

5. When Setup displays the **IPL Completed** dialog box, click **Restart**.
6. Restore the default BIOS settings to enable boot monitoring and, optionally, to enable Option ROM on the PCI slots. While the system is booting, press F2 to enter the BIOS Setup program. In the BIOS Setup program, press F9 to restore the default settings, then press F10 to exit from the BIOS Setup program. You must enable boot monitoring to maintain fault tolerance.

**CAUTION**

If you do not enable boot monitoring after you perform the IPL, fault-tolerance of the system is compromised.

7. Express5800/320MaAfter the system has restarted, log on again. The Post Installation Check window appears for several minutes.
8. The **Post Installation Check Tool** dialog box appears and automatically runs. This tool verifies that the upgrade was successful and that the system is restored to full operation. Click **Exit** to dismiss the **Post Installation Check Tool** dialog box. See "IPL Considerations" on page 2-2 for a description of the file created by the Post Installation Check tool.
9. The message box 'Has the NEC ExpressCluster Web service been set up?' may appear during the NEC ExpressCluster SRE installation, but will automatically disappear after 5 seconds. **DO NOT** take action to this prompt, or the system may appear to hang.




10. If you are attaching any EMC® storage systems to the system, do the following:
    a. Download and install the latest QLogic® Fibre Channel drivers for Windows 2003.
       – See the *Express5800/320Ma: PCI Adapter Guide* for information about the U525 or U526 PCI adapters that provide connectivity to EMC CLARiiON® and Symmetrix® storage systems, and instructions for downloading, extracting, and installing the driver.
       – See *Attaching an EMC CLARiiON AX100 Storage System to an Express5800/320Ma System* for information about the U531 Optical Fibre Channel PCI Adapter that provides connectivity to AX100 storage systems, and instructions for downloading, extracting, and installing the driver.
    b. Install the EMC PowerPath® software. See the PowerPath documentation from EMC.
    c. Connect the system to the storage enclosure. If the storage enclosure is part of a storage area network (SAN), add the system to the SAN.
11. Configure your system. In particular, do the following:

- Mirror the disks.
- If your system contains VTMs, make sure the VTMs contain the most up-to-date firmware.
- Use PROSet to configure Ethernet ports into teams.

For more information about configuring your system, see the *Express5800/320Ma: Software Installation and Configuration Guide*.

# Chapter 3
# Configuring Software

For information about configuring your Express5800/320Ma software, see the following:


- “Overview: Configuring Software” on page 3-1
- “Extending the Microsoft SNMP Agent” on page 3-2
- “Ensuring That VTMs Use Up-to-Date Firmware” on page 3-6
- “Mirroring Disks” on page 3-7
- “Configuring Teams of Network Adapters” on page 3-14


## Overview: Configuring Software

You may encounter the following dialog boxes when you configure the system:

- If the **Found New Hardware Wizard** dialog box appears, follow the prompts, if any, and click **Finish**. Note that this dialog box may appear periodically during the configuration process. Click **Finish** each time it appears.
- If the **System Settings Change** dialog box appears, click **No**. Note that this dialog box may appear periodically during the configuration process. Click **No** each time it appears.

**Checklist: Configuring Software on Express5800/320Ma Systems**

- ❏ To extend the Microsoft SNMP Agent for Express5800/320Ma systems, see "Extending the Microsoft SNMP Agent" on page 3-2.
- ❏ Use NTFS file systems on your disks.
- ❏ Make sure the Virtual Technician Modules (VTMs) in your system are using the latest version of VTM firmware. See "Ensuring That VTMs Use Up-to-Date Firmware" on page 3-6.
- ❏ Configure the Ethernet adapters into teams. See "Configuring Teams of Network Adapters" on page 3-14.
- ❏ To prepare to use ftServer Management Console (ftSMC), see the *Express5800/320Ma: System Administrator's Guide*.

## Extending the Microsoft SNMP Agent

The SNMP Agent for Express5800/320Ma systems extends the Microsoft SNMP Agent, allowing third-party enterprise management consoles to remotely monitor the systems. The enterprise management console must conform to the SNMP and must support the loading of SNMP Management Information Base (MIB) files.

The SNMP Agent for Express5800/320Ma systems provides a standard mechanism for monitoring the status of the systems and for receiving alarms from these systems.

The SNMP Agent for Express5800/320Ma systems is installed when the system software for the system is installed or upgraded.

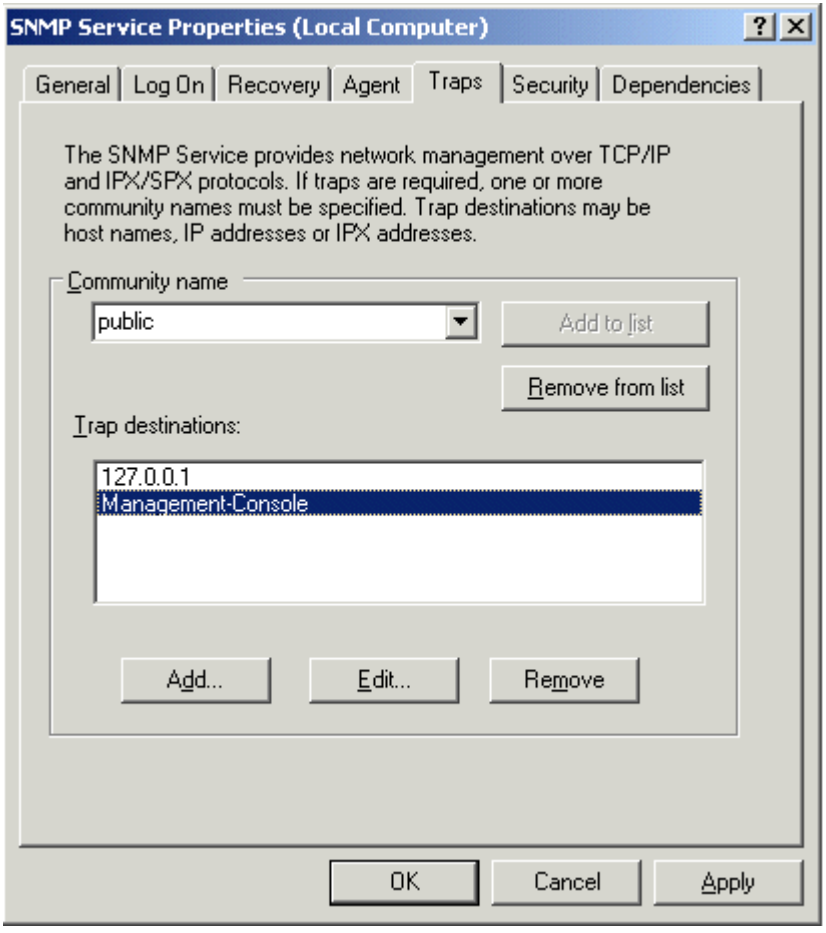
The Microsoft SNMP Agent must be configured globally for all applications that use SNMP. For administrative information about the Microsoft SNMP Agent, see the Windows Help system.

To extend the Microsoft SNMP Agent, see "Configuring the SNMP Agent" on page 3-3 and "Loading the SNMP MIB File" on page 3-6.

## Configuring the SNMP Agent

1. Right-click **My Computer** and click **Manage**.
2. Expand **Services and Applications** and click **Services**.
3. In the details pane, right-click **SNMP Service** and click **Properties**. Then click the **Traps** tab to control which computers will receive alarm information (traps).
4. To add another destination, on the **Traps** tab, click **Add** (see Figure 3-1). In the **SNMP Service Configuration** dialog box, type the host name, IP address, or IPX address of an additional destination to which you want alarm information (traps) sent. Click **Add**. Typically, you add the computers and their backup computers that run the enterprise management console.
5. Repeat step 4 for any additional destinations.
6. Click **Apply**.

**Figure 3-1. SNMP Service Properties Traps Tab**

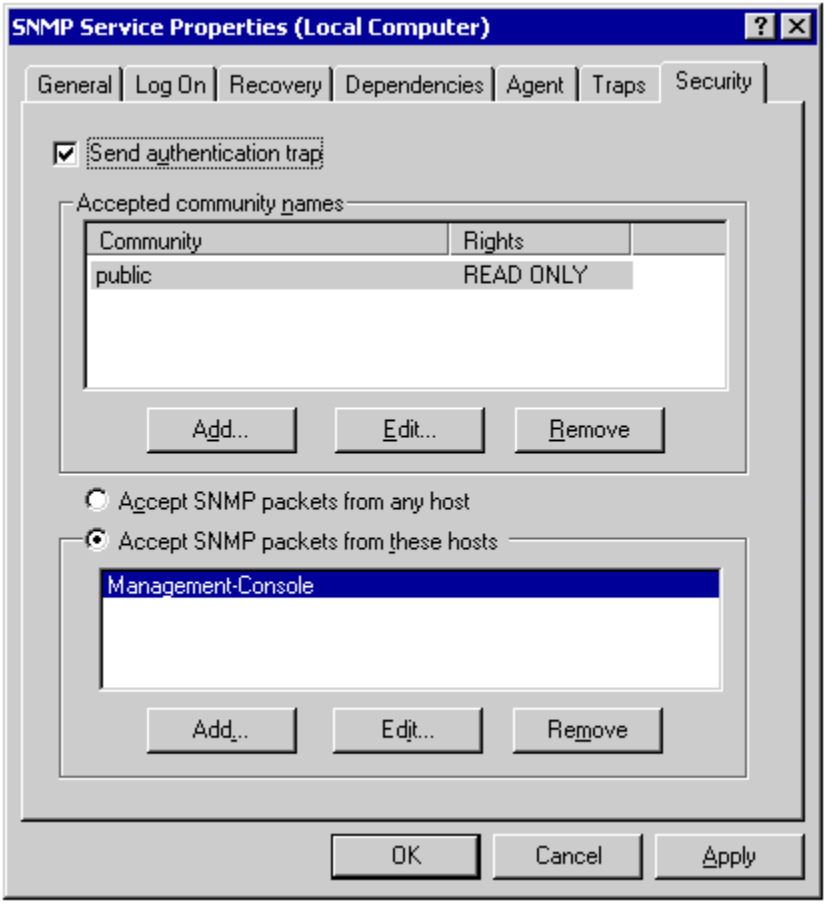



7. Click the **Security** tab, which allows you to select the computers that have access to SNMP variables. Do not remove any existing variable access settings. For security reasons, click the **Accept SNMP packets from these hosts** option (see Figure 3-2).
8. Below the **Accept SNMP packets from these hosts** option, click **Add**.
9. In the **SNMP Service Configuration** dialog box, type the host name, IP address, or IPX address of any additional computers that will be allowed access to MIB variables. Click **Add**.

   Typically, you add the computers and backup computers that run the enterprise management console.

10. Repeat step 8 for any additional computers that need MIB access.

**Figure 3-2. SNMP Service Properties Security Tab**




11. Click **OK**.

### Loading the SNMP MIB File

To load the Sra_ftserver.mib file into your enterprise management console, follow the instructions for loading MIB files in the documentation for your enterprise management console.

You can obtain the Sra_ftserver.mib file from:

- The %ProgramFiles%\stratus\MIB directory on an Express5800/320Ma system
- The %ProgramFiles%\stratus\MIB directory on another computer that has the RMI software installed

## Ensuring That VTMs Use Up-to-Date Firmware

If your system contains Virtual Technician Modules (VTMs), perform the following steps to make sure the VTMs contain the latest version of the firmware.

1. Compare the version numbers of the firmware on the VTMs and on the VTM Firmware CD-ROM that you received with your system.
   a. Find the version of the firmware that is specified on the CD-ROM label.
   b. Open ftServer Management Console (ftSMC): Double-click **ftServer Management Tools** on the Windows desktop.
   c. In ftSMC, expand **ftServer I/O Enclosures** and **I/O Enclosure - 10**. Expand **VTM Adapter - 3** or **VTM Adapter - 4**, and click the nested **VTM Adapter - 3** or **VTM Adapter - 4** node. Examine the value next to *`Opstate:State`* in the details pane.

      If the value is *`FW Update or Firmware Update Complete`*, the firmware on the VTM is being burned to match the version on the system disk. Wait for this process to be complete on both VTMs. To monitor the process, click the higher-level **VTM Adapter - 3** or **VTM Adapter - 4** node. When the value of *`Opstate:State`* in the details pane is *`Duplex`*, the process is complete.

   d. Click the nested instance of **VTM Adapter - 3** or **VTM Adapter - 4**.

      In the details pane, note the value next to *`FWVersion`*, which specifies the version number of the VTM firmware that is on the system disk and on the VTMs.

   e. Compare the value in ftSMC to the value on the CD-ROM label.
2. If the version number specified on the CD-ROM label is more recent than the version number on the VTMs, update the system disk and VTMs with the firmware on the CD-ROM, as described in “Updating VTM Firmware” on page 6-1.

# Mirroring Disks

For optimal performance, use Rapid Disk Resync (RDR) disk mirroring, as described in "Using RDR to Mirror Disks in Internal Storage" on page 3-8, to configure and create managed disks in the internal storage enclosure. RDR disk mirroring is supported only on internal disks. With RDR disk mirroring, you mirror pairs of physical disks to create virtual disks. Each pair of mirrored disks constitutes one virtual disk. The data on one disk is replicated in full on the corresponding disk. RDR disk mirroring does not create volumes.

RDR offers faster resynchronization of mirrored disks than other mirroring methods after transient failures or when a single disk is briefly removed from service.

If you configure RDR disk mirroring, you can leave disks as basic volumes, or you can use a disk-management tool to create striped volumes, which provides RAID1+0.

NOTES

1. If you use a disk-management tool to mirror disks, make sure neither disk is a plex of an RDR virtual disk.
2. Do not partner RDR and non-RDR *system disks* in a mirror. Otherwise, the disks will fully resynchronize after every restart if the RDR disk is not the primary boot volume from which the system is booted.
3. If you create an RDR virtual disk from two physical disks, only one disk appears in the disk-management tool.

Use a disk-management tool to create mirrored volumes on disks in external storage enclosures. See the *Express5800/320Ma: System Administrator's Guide* for guidelines to ensure data fault-tolerance of volumes on disks in external storage enclosures.

NOTES

1. On the system disk, the IPL procedure creates a boot partition that contains the operating system and all of its components. Because the system disk and boot partition hold system-critical files, such as the paging file and system event files, limit the traffic to this disk to system traffic only.
2. You can greatly reduce application downtime when you upgrade software by installing and using the optional NEC Solutions (America), Inc. Express5800/320Ma Active Upgrade™ Software. If

you do plan to install and use Active Upgrade Software, keep system files on a separate disk from data files. See the *Express5800/320Ma: Active Upgrade User's Guide* for more information about Active Upgrade.

## Using RDR to Mirror Disks in Internal Storage

NOTE

A system restart is required when you add the first system disk to an RDR virtual disk. A prompt asks you to restart the system after you add the disk.

1. Make sure that the second disk (the one designated as the mirror) has no partitions and that both of the disks you are pairing:
   - Have the same capacity, or if they have different capacities, that you add the disk with the smaller capacity to the virtual disk before you add the disk with the larger capacity
   - Are basic disks (not dynamic)

     If the disks have been configured as dynamic disks, see "Converting a Dynamic Disk to a Basic Disk" on page 3-10, "Using RDR to Mirror Dynamic System Disks" on page 3-11, or "Using RDR to Mirror Dynamic Data Disks" on page 3-12.
2. Insert and latch disks in corresponding slots in each enclosure of the system. See Figure 3-3.
3. Start ftServer Management Console (ftSMC): Double-click **ftServer Management Tools** on the Windows desktop.
4. In ftSMC, select the target disk in I/O enclosure 10.

   For example, expand **ftServer I/O Enclosures**, **I/O Enclosure - 10**, **Storage Enclosure - 40**, **Slot - 1**, and then click **Disk - 0**.
5. Right-click the target disk and click **Add Physical Disk To RDR Virtual Disk**.
6. In the **Device Configuration Change** message box, click **Yes**.
7. Repeat steps 4 – 6 on the corresponding disk in I/O enclosure 11. For example, expand **ftServer I/O Enclosures**, **I/O Enclosure - 11**, **Storage Enclosure - 40**, **Slot - 1**, and then click **Disk - 1**.
8. Allow time for the two disks to synchronize.

- While the disks are resynchronizing, LEDs blink to indicate read and write operations, and ftSMC displays a value of *Syncing* next to *OpState: State* in the details pane for the disk.

  To view the progress of the synchronization in ftSMC, expand **Logical Disk Information** under **ftServer I/O Enclosures** and select the virtual disk (for example, **RDR Virtual Disk 1**). In the details pane, the progress is noted as a percentage in the value next to *Status*. For example:

  *Status: Resync: 20 percent*

- When the disks are synchronized, the LEDs on both disks are lit steady green and ftSMC displays a value of *Duplex* next to *OpState: State* in the details pane for the disk and for the virtual disk. The value next to *Status* for the virtual disk is *None*.

When you add the first system disk to an RDR virtual disk, a **System Shutdown** message appears, stating that the system will reboot in two minutes. Let the system restart.

9. For each additional virtual disk to be created, repeat steps 4 – 8, mirroring the following:

   - The disk under **Slot 2** of **I/O Enclosure - 10** with the disk under **Slot 2** of **I/O Enclosure - 11** to create Virtual Disk 2
   - The disk under **Slot 3** of **I/O Enclosure 10** with the disk under **Slot 3** of **I/O Enclosure 11** to create Virtual Disk 3

**Related Topics**

"Mirroring Schemes for Internal Disks" on page 3-9

"Converting a Dynamic Disk to a Basic Disk" on page 3-10

"Using RDR to Mirror Dynamic System Disks" on page 3-11

"Using RDR to Mirror Dynamic Data Disks" on page 3-12

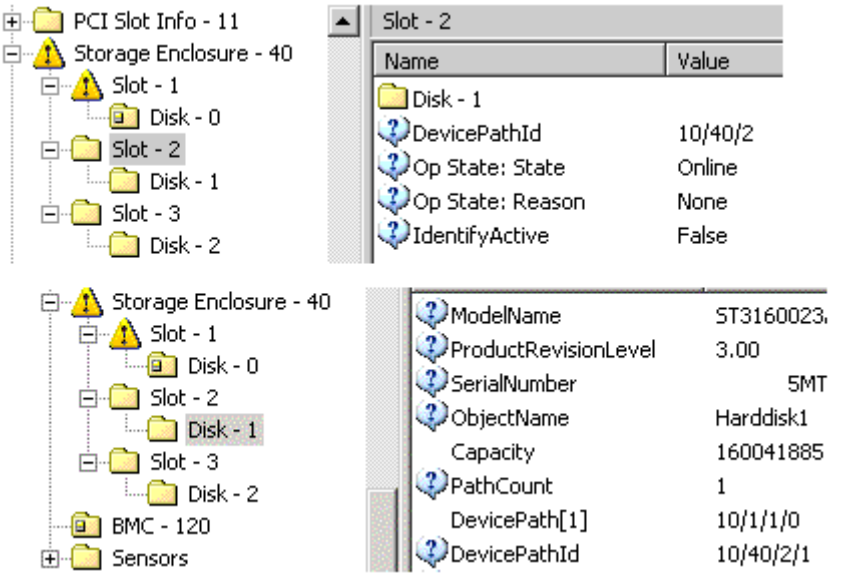
## Mirroring Schemes for Internal Disks

On the front of an Express5800/320Ma system, disk slots are identified by the numbers 1, 2, and 3, and in ftServer Management Console (ftSMC), these slots are represented by Slot - 1, Slot - 2, and Slot - 3 nodes. Software assigns the numbers 0, 1, and 2 to the disks in these slots. So, for example, the disk in slot 1 is displayed as Disk - 0 under a Slot - 1 node. The RDR virtual disk numbering follows the slot numbering (not the disk numbering) in ftSMC. So, Disk - 0, which is in slot 1, is assigned to RDR Virtual Disk - 1.

Figure 3-3 shows a representation of the disk slots in the system, specifying the slot number, the device IDs of the disk, and the virtual disk to which software assigns the physical disk when you use RDR to mirror the disks. When you use RDR to mirror disks in these systems, software pairs the disks as shown by the lines in Figure 3-3. If you use a disk-management tool to create volumes, use this same scheme to mirror the volumes on the disks.

Figure 3-3 shows the disk numbers and their corresponding slot numbers and the device ID for slot 2, in I/O element 10, and for disk 1 in slot 2 of I/O element 10.

**Figure 3-3. Slot and Disk Numbering**




## Converting a Dynamic Disk to a Basic Disk

**CAUTION**

Converting a dynamic disk to a basic disk removes all data from the disk. So that you can recover the data, back it up before you convert the disk to a basic disk.

1. Open Disk Management: Right-click **My Computer** and click **Manage**. Then expand **Computer Management** and **Storage**, and click **Disk Management**.
2. In the lower portion of the details pane, right-click the icon of the target disk.
3. Select **Convert to Basic Disk**.

4. If necessary, recover the information from backup media.

## Using RDR to Mirror Dynamic System Disks

If your system contains VTMs, you can convert system disks that are dynamic to disks that are mirrored with RDR, and that are also dynamic.

### To use RDR to mirror dynamic system disks

1. If necessary, insert and latch the pair of disks that contain the mirrored system volumes and boot the system.
2. As a precaution, back up the disks.

   NOTE

   This procedure does not require you to back up and restore the information from backup media. Back up the information solely as a precaution.

3. Make sure that I/O enclosure 10 is primary: Open ftServer Management Console (ftSMC), expand **ftServer I/O Enclosures**, **I/O Enclosure - 10**, and examine the *`Opstate:Reason`* property. If the value is *`Primary`*, go to step 4. If the value is *`Secondary`*, do the following:
   a. In ftSMC, expand **VTM Adapter - 3** or **VTM Adapter - 4**, and right-click **VTM Config**.
   b. Click **Set Primary**.
4. Open Disk Management: Right-click **My Computer** and click **Manage**. Then expand **Computer Management** and **Storage**, and click **Disk Management**.
5. Make sure that both system disks are active and mirrored.
6. In the **Remove Mirror** dialog box, select and right-click the system disk in I/O enclosure 11 and click **Remove Mirror**. When you receive a message asking *`Are you sure you want to remove the mirror`*, click **Yes**.
7. Revert the system disk in I/O enclosure 11 to basic.
8. In ftSMC, add the physical disk in I/O enclosure 11 to an RDR virtual disk. See “Using RDR to Mirror Disks in Internal Storage” on page 3-8.
9. In your disk-management tool, convert the disk in I/O enclosure 11 to a dynamic disk, and add the disk to the volume mirror that contains the system disk. See the online Help for your disk-management tool.

   Wait for the disks to resynchronize before continuing.

10. Make I/O enclosure 11 the primary enclosure:
    a. In ftSMC, expand **ftServer I/O Enclosures** and **I/O Enclosure - 11**.
    b. Expand **VTM Adapter - 3** or **VTM Adapter - 4**, and right-click **VTM Config**.
    c. Click **Set Primary**.
11. Restart the system.
12. In Disk Management, in the **Remove Mirror** box, select and right-click the system disk in I/O enclosure 10 and click **Remove Mirror**. When you receive a message asking *`Are you sure you want to remove the mirror`*, click **Yes**.
13. Revert the system disk in I/O enclosure 10 to basic.
14. Boot the system again, making sure I/O enclosure 11 is still primary. See step 3.
15. In ftSMC, add the physical disk in I/O enclosure 10 to the RDR virtual disk.

NOTE

For help with the steps you perform in Windows Disk Management, see the Windows Disk Management help.

## Using RDR to Mirror Dynamic Data Disks

If your disks use volume mirroring, you can set them up to use both RDR disk mirroring and volume mirroring to obtain striped mirrors (RAID1+0). To do so, perform the following steps, which require you to convert each disk to basic, use RDR to mirror the disk, then convert the disk back to a dynamic disk. By converting one disk at a time, you can preserve the data on the disks and restore the volume mirroring.

1. If necessary, insert and latch the pair of disks that contain the mirrored data volumes.
2. As a precaution, back up the data on the disks.

NOTE

This procedure does not require you to back up and restore the information from backup media. Back up the information solely as a precaution.

3. From one of the disks in the pair, remove the mirrors from the mirrored volumes. See “Breaking the Mirror of the System Volume” on page 7-4.

   Revert this disk to basic.

4. In ftServer Management Console (ftSMC), add this physical disk to an RDR virtual disk. See “Using RDR to Mirror Disks in Internal Storage” on page 3-8.

5. In your disk-management tool, convert this disk to a dynamic disk and add the volumes to the volume mirrors. See the online Help for your disk-management tool.
6. Wait for the disks to resynchronize before continuing. When the volume mirrors are synchronized, on the other disk of the pair, remove the volumes from the mirrored volume.
7. Revert this disk to basic.
8. In ftSMC, add this physical disk to the RDR virtual disk. See "Using RDR to Mirror Disks in Internal Storage" on page 3-8.

## Creating a Spare Bootable Hard Disk

1. Immediately after the upgrade, mirror the system disk as described in "Using RDR to Mirror Disks in Internal Storage" on page 3-8.
2. After the disks have synchronized, deport the disk that is the mirror of the system disk.

   To deport the disk, open ftServer Management Console (ftSMC), right-click the disk you want to deport, and click **Deport Physical Disk from RDR Virtual Disk**. For more information, see the Help for ftSMC.
3. Physically remove the mirrored system disk from the system. Label and store this disk, which is now the spare bootable hard disk, in a safe place.
4. Insert another disk in the same slot and mirror the system disk as described in "Using RDR to Mirror Disks in Internal Storage" on page 3-8. Leave this disk in the system.

**Related Topic**

"Booting from a Spare Bootable Hard Disk" on page 3-13

## Booting from a Spare Bootable Hard Disk

1. Remove power from the system.
2. Remove the two copies of the system disk.
3. Insert the spare disk and restart the system.

# Configuring Teams of Network Adapters

Configure teams of Ethernet network adapters to increase the redundancy and capacity of a network connection.

Before you configure the teams, attach the network adapters to the network.

NOTE

Express Teams are not supported in Express5800/320Ma systems. Create only Advanced Networking Service Teams in PROSet.

**Checklist: Configuring Ethernet Teams**

- ❏ For all adapters you plan to add to a team, make sure that the values for the Advanced Settings in PROSet are identical.
- ❏ Configure the link speed and duplex mode on adapters connected to networks running at 10 or 100 Mbps. See "Configuring Link Speed and Duplex Mode" on page 3-14.
- ❏ Create fault-tolerant teams of Ethernet adapters. See "Creating Network Adapter Teams" on page 3-15.
- ❏ Verify that the teams are correctly configured. See "Verifying the Network Adapter Team Configuration" on page 3-17.
- ❏ Assign an IP address to the team. See "Assigning an IP Address to a Network Adapter Team" on page 3-17.
- ❏ If necessary, see "Troubleshooting Network Adapters" on page 3-18.

For more information about teaming Ethernet PCI adapters, see the *Express5800/320Ma: PCI Adapter Guide*.

## Configuring Link Speed and Duplex Mode

By default, network adapters are configured to autonegotiate the best speed for the connection. On a network that operates at 10 or 100 megabits per second (Mbps), automatic settings can result in unreliable connections and inaccurate reporting of link activity and duplex mode. For reliable operation, configure the link speed and duplex mode for U575 Dual-Port Copper Gigabit Ethernet Adapters and embedded Ethernet PCI adapters **connected to networks that operate at 10 or 100 Mbps**.

NOTES

1. For Ethernet adapters connected to networks running at 1 gigabit per second (Gbps), rely on

autonegotiation. Do not manually configure 1-Gbps operation.

2. Express5800/320Ma systems support 1-Gbps line speed only in full-duplex mode.

When you manually set these values, make sure that the values are identical for an Ethernet adapter and the media it connects to, and that the settings for all Ethernet adapters in one team are the same.

**To set the link speed and duplex mode**

1. Start the PROSet utility: Double-click **PROSet** in the system tray: .
2. In the left pane of the **Intel(R) PROSet for Wired Connections** dialog box, click an adapter.
3. Click the **Speed** tab.
4. Under **Link Speed and Duplex Settings**, select the speed and duplex mode appropriate to the adapter and to the type of line to which the adapter is connected.
5. Repeat steps 2 through 4 for each adapter for which you need to set the link speed and duplex mode, setting the link speed and duplex mode identically for all adapters in a team.
6. Click **OK**.
7. When the **Intel(R) PROSet for Wired Connections** dialog box reappears, click **OK**, allowing PROSet to process the procedure and to close. Allow several seconds for PROSet processing.
8. Verify that the link speed and duplex mode are correct after PROSet has closed. Check the network equipment that is connected to the Ethernet adapter (for example, check LEDs). If the link speed and duplex mode are not correct, you can remove and replace network cables. If the link speed and duplex mode are still not correct, check that the network equipment supports the link speed and duplex mode that you set.

## Creating Network Adapter Teams

1. Start the PROSet utility: Double-click **PROSet** in the system tray: .
2. In the **Intel(R) PROSet for Wired connections** dialog box, right-click one of the Ethernet ports listed, point to **Add to Team**, and then click **Create New Team**.

   The **Teaming Wizard** starts.

3. In the first dialog box of the **Teaming Wizard**, select the teaming method you want to use (for example, **Adapter Fault Tolerance**), and then click **Next**.

NOTE

See the **Intel (R) PROSet Help** for more information about the teaming methods. In particular, if you are choosing Static Link Aggregation, observe the NOTE: "For this type of team, you must add the adapter to the team with link down."

4. In the next dialog box, select the adapters for the team.

   A check mark next to an adapter indicates the adapter will be made a member of the team. Click the check boxes next to the adapters to select or deselect them.

   Make sure that you create teams that contain adapters located in different CPU-I/O enclosures. One way to determine where adapters are located is to use the Identify Adapter utility in PROSet to flash the LED on each adapter. In PROSet, click the adapter, click the **Identify Adapter** button on the **General** tab, and follow the instructions on the Identify Adapter message box.

   NOTES

   1. If you add additional adapters to a team later, the system will briefly lose network connectivity. To avoid this network interruption, configure a larger team now.
   2. If a team contains a U574 Dual-Port Fiber Gigabit Ethernet Adapter, the only supported configuration is teaming it with other U574 PCI adapters.

5. Click **Next** and then click **Finish**.
6. When the **Intel(R) PROSet for Wired connections** dialog box reappears, click **Apply**. PROSet binds the specified adapters into teams. This operation takes at least one minute per team to complete. PROSet closes after processing is complete. Do not abort the operation until it has completed. Otherwise, you must repeat the procedure.

## Verifying the Network Adapter Team Configuration

1. Restart the PROSet utility and verify that:
   - The teams have been created correctly.
   - All adapters in each team have the same Ethernet address.
   - An IP address has been assigned **to the team**.

     If the team has an IP address, the procedure is complete. Close PROSet.

     If the team does not have an IP address, assign it one, as described in "Assigning an IP Address to a Network Adapter Team" on page 3-17. (After a team is created, individual adapters in the team no longer have an IP address.)
2. In ftServer Management Console (ftSMC), select each Network Port you teamed and, in the details pane, verify that the value next to `OpState: State` is `Duplexed`. If not, you may need to wait a few seconds for the information to be updated.

## Assigning an IP Address to a Network Adapter Team

If you plan to configure any teams as members of a Virtual LAN (VLAN), do so before you assign IP addresses to the teams. For VLAN information, see the *Express5800/320Ma: PCI Adapter Guide* and the PROSet online Help.

NOTE

Express5800/320Ma systems support VLAN connections only over teams.

**To assign an IP address to a network adapter team**

1. Click **Start**, point to **Control Panel**, and then double-click **Network Connections.**
2. In the **Network Connections** control panel, right-click the appropriate Team #*n* icon, and then click **Properties**.
3. In the **Team Properties** dialog box, click **Internet Protocol (TCP/IP)** under **Components checked are used by this connection**, and then click **Properties**.
4. In the **Internet Protocol (TCP/IP) Properties** dialog box, select **Obtain an IP address automatically** or **Use the following IP address**. If you select **Use the following IP address**, enter the IP address, subnet mask, and default gateway. Consult your network administrator for all TCP/IP property settings.

NOTE

Make sure the TCP/IP property settings match the configuration of the network to which the Ethernet adapter

is connected. Select **Obtain an IP address automatically** only if the network supports it.

5. Click **OK** to accept the changes.
6. In the **Team Properties** dialog box, click **Close** to process the new TCP/IP settings and to close the dialog box.
7. Restart the PROSet utility and verify that the new IP address appears in the **Team Configuration** tab for the team.

## Troubleshooting Network Adapters

To troubleshoot Ethernet PCI adapters, you can perform general troubleshooting procedures for the Express5800/320Ma system and procedures specific to Ethernet PCI adapters. For information about general procedures for troubleshooting your system, see its operation and maintenance guide. These procedures include viewing messages in the event log, and checking system inventory from the ftServer Management Console (ftSMC) for component status.

Troubleshoot Ethernet PCI adapters by:

- Checking the network cables
- Checking the status LEDs on the system, enclosure, and PCI slot
- Verifying link data rate and mode
- Using the PROSet utility diagnostics

For more information about troubleshooting Ethernet PCI adapters, see the *Express5800/320Ma: PCI Adapter Guide*.

# Chapter 4
# Performing the Reload Procedure

For information about reloading system software on Express5800/320Ma systems, see the following:


- "Preparing to Reload Software" on page 4-1
- "Reloading Express5800/320Ma Software" on page 4-2


NOTE

Before proceeding, check the information in the *Release Notes: Express5800/320Ma* on the Express5800/320Ma ExpressBuilder CD (2 of 2) shipped with your system for updated information about the reload procedure.

## Preparing to Reload Software

If the system experiences a disaster that corrupts the software on an Express5800/320Ma system, reload the software. The reload procedure replaces all Express5800/320Ma software files. It does not replace any operating system files. Therefore, note the following:

- Perform the reload procedure only if Express5800/320Ma software is corrupted.
- To replace the operating system, or if your disks have lost Master Boot Record or partition information, perform the IPL procedure, which Chapter 2, "Installing Express5800/320Ma System Software" describes.

NOTE

The reload procedure deletes previous versions of the files before installing the new ones. In these instances, the new files require approximately the same amount of disk space as the previous files.

- Make sure Windows Server 2003 is running properly.
- Make sure that the boot partition on the system disk is at least 6144 MB.

- Make sure you have the following media available:
  - ExpressBuilder CD (1 of 2)
  - ExpressBuilder CD (2 of 2)
  - Backup media, if you are performing a disaster recovery and can back up the system, or have a backup from which you can restore data

## Reloading Express5800/320Ma Software

1. Do one of the following:
   - Browse to a local network share that contains the contents of the Express5800/320Ma ExpressBuilder CD (1 of 2). Open the **bin** folder and double-click **Setup.hta**.
   - Insert the Express5800/320Ma ExpressBuilder CD (1 of 2) into the CD-ROM drive in the enclosure whose power button LED is green-lit.
2. The Express5800/320Ma software reload procedure automatically runs.

   If the Express5800/320Ma software reload procedure does not automatically run when you insert the CD, on the Windows task bar, click **Start** and then **Run**. Substituting the drive letter of your CD-ROM drive for D, type the following command:

   ```
   D:\bin\setup.hta
   ```

   NOTES

   1. If, at any point during the reload procedure, a dialog box appears with the message *The Target file exists and is newer than the source*, click **Continue**.
   2. During the reload procedure, the **Progress** dialog boxes may obscure other dialog boxes. If the reload procedure appears stalled, move the **Progress** dialog box and check for a message box that requires you to click **OK**.
3. Follow the prompts to run the reload readiness test, which determines whether your system has the necessary conditions for reinstalling Express5800/320Ma software. If the system passes the test, go to step 4.

If the system fails the test, click **View Log** on the **Reload Readiness Test Failed** dialog box to examine the results of the test. Then, perform the necessary tasks to correct the situation and run the reload readiness test again.

- If the log indicates that you must stop the Microsoft Management Console (MMC), close all instances of MMC, including ftServer Management Console (ftSMC) sessions and remote MMC sessions.
- If the BMC or Virtual Technician Module (VTM) firmware or the BIOS test failed, upgrade the BIOS or firmware. See Chapter 6, “Updating Firmware” for details.

4. When the **Readiness Test Passed** dialog box appears, follow the prompts to reload Express5800/320Ma software.
5. When the **Installation Completed** dialog box appears, do one of the following:
   - If the **Installation Completed** dialog box does not list any warnings or errors, click **Restart**.
   - If the **Installation Completed** dialog box lists warnings or errors, click **View Log**.
     - If the log does not list any WSH warnings or errors, click **Restart**.
     - If the log lists any Windows Scripting Host (WSH) warnings or errors, click **Exit** in the **Installation Completed** dialog box, and then check the application event log to find the specific error. To open Event Viewer and clear the logs, click **Start**, point to **Control Panel** and **Administrative Tools**, and double-click **Event Viewer**. After you resolve any errors, restart the system.

   Restarting the system activates some of the replaced drivers.
6. After the system has restarted, log on. The Express5800/320Ma Post Installation Check window appears for several minutes. Wait until it completes.

# Chapter 5
# Performing the Remote Management Installation Procedure

For information about installing remote-management software for Express5800/320Ma systems on a PC, see the following:


- "Overview of the Remote Management Installation Procedure" on page 5-1
- "Performing the RMI Procedure" on page 5-1
- "Installing Documentation for Express5800/320Ma Systems" on page 5-2
- "Removing Programs and Documentation" on page 5-3


## Overview of the Remote Management Installation Procedure

The remote management installation (RMI) procedure installs ftServer Management Console (ftSMC) and the Java 2 Runtime Environment (JRE) on a PC that is running Windows 2000 (any type), Windows Server 2003, or Windows XP. JRE is used by the Virtual Technician Module (VTM) console.

ftSMC and VTM enables you to monitor and manage Express5800/320Ma systems from your PC. For information about these tools, see the following:

- The *Express5800/320Ma Virtual Technician Module User's Guide* or the online Help for the VTM console
- The *Express5800/320Ma: System Administrator's Guide* and the online Help for ftSMC

## Performing the RMI Procedure

1. Do one of the following:
   - Browse to a local network share that contains the contents of the Express5800/320Ma ExpressBuilder CD (1 of 2). Open the **bin** folder and double-click **Setup.hta**.
   - Insert the Express5800/320Ma ExpressBuilder CD (1 of 2) into the CD-ROM drive.

2. Express5800/320Ma software RMI automatically runs.

   If Express5800/320Ma software RMI does not automatically run when you insert the CD, on the Windows task bar, click **Start** and then **Run**. Substituting the drive letter of your CD-ROM drive for D, type the following command:

   ```
   D:\bin\setup.hta
   ```

3. Follow the prompts to run the Express5800/320Ma software RMI Readiness Test, which determines whether your system has the necessary conditions for installing remote-management software for Express5800/320Ma systems. If the system passes the test, go to step 4.

   If the system fails the test, click **View Log** on the **Readiness Test Failed** dialog box to examine the results of the test. Then perform the necessary tasks to correct the situation and run the Express5800/320Ma Software RMI Readiness Test again.

4. When the **Readiness Test Passed** dialog box appears, follow the prompts to install remote-management software for Express5800/320Ma systems.

   You can accept the default settings for any third-party software installed.

## Installing Documentation for Express5800/320Ma Systems

The installation lets you install model-specific versions of the documentation on a PC.

Before you install the documentation, make sure that:

- You have the ExpressBuilder CD (2 of 2) for Express5800/320Ma systems available.
- The system disk has approximately 60 MB of space available for each documentation set.
- Microsoft Internet Explorer® is the default browser, and both JavaScript™ and cookie support are enabled in the browser.

- To view PDF versions of the documentation, Adobe Reader (version 4.0 or later) is installed on the system.
- Windows 2000 (any type), Windows XP, or Windows Server 2003 is installed on the system.

**To install the documentation on a workstation**

1. Insert the ExpressBuilder CD (2 of 2) for Express5800/320Ma systems into the CD-ROM drive of the workstation.
2. When the installation splash screen appears in your browser, click **Install, upgrade, or restore**.
3. When the second installation splash screen appears in your browser, select the following:

   **Express5800/320Ma system running Express5800/320Ma software Release 4.x.x.x**

4. If the **File Download** dialog box appears, click **Open** or select **Run this program from its current location**, and then click **OK**. Do not select **Save** or **Save this program to disk**.

   The installation program installs the documentation. The installation takes up to several minutes to complete.

5. When the installation is complete, you can choose to install the documentation for a different Express5800/320Ma platform by performing steps 3 and 4 again, using the active browser from step 3.

## Removing Programs and Documentation

Perform the following steps to remove ftServer Management Console (ftSMC), the Java 2 Runtime Environment (JRE) and Express5800/320Ma documentation from a workstation.

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
2. Click **Add or Remove Programs** or **Add/Remove Programs**.
3. In the **Add/Remove Programs** dialog box, click the appropriate icon:
   - **ftServer Management Console** removes ftSMC.
   - **Java 2 Runtime Environment Standard Edition x.x** removes JRE.
4. **Express5800/320Ma *Model* Help and Manuals**Click **Change** or **Change/Remove**.
5. When the software asks if you want to remove the program or documentation, click **OK**.

# Chapter 6
# Updating Firmware

For information about updating firmware, see the following:


- “Preparing to Update Firmware” on page 6-1
- “Updating VTM Firmware” on page 6-1
- “Updating the BIOS” on page 6-4
- “Updating BMC Firmware” on page 6-8


## Preparing to Update Firmware

Before you update firmware on your system, observe the following:

- In ftServer Management Console (ftSMC), make sure that all CPU and I/O elements on the system are functional.
- In general, update system components in the following order:
  1. Virtual Technician Module (VTM) firmware, if the system contains VTMs
  2. BIOS

     If the BIOS is corrupted, contact NEC Technical Support.
  3. BMC firmware
  4. Express5800/320Ma software

## Updating VTM Firmware

Not all systems contain VTMs. To determine whether the system has VTMs, double-click **ftServer Management Tools**, expand **ftServer** for the system, then expand **ftServer I/O enclosures** and **I/O Enclosure - 10**.

If **VTM Adapter - 3** or **VTM Adapter - 4** is listed, the system contains VTMs.

**Checklist: Updating VTM Firmware**

- ❏ Verify that there are no active connections with the ActiveService Network (ASN). To end or prevent ASN connections, disconnect the modem from the system or from the phone jack.
- ❏ In ftServer Management Console (ftSMC), verify that both VTMs are online and running in duplex mode. Expand **ftServer (Local)**, **ftServer I/O Enclosures**, and **I/O Enclosure - 10**. Click **VTM Adapter - 3** or **VTM Adapter - 4**. In the details pane, make sure the value of *`OpState:State`* is *`Duplex`*. Do not update the firmware if the value is *`Simplex`*.

**To update the VTM firmware**

1. To copy the VTM firmware file to the system, do one of the following:
   - Insert the Express5800/320Ma VTM Firmware Update CD in the CD-ROM drive. In the VTM Firmware Setup message box, click **OK**.
   - Download a file that contains the VTM firmware from the Express5800/320Ma System Downloads page at http://support.necsam.com/servers/. Save the file in the %ProgramFiles%\Stratus\Firmware\VTM folder.
2. In ftSMC, expand **ftServer (Local)**, **ftServer I/O Enclosures**, and **I/O Enclosure - 10**. Expand **VTM Adapter - 3**, or **VTM Adapter - 4** and then click **VTM Config - 3** or **VTM Config - 4**.
3. Make sure that the system is not automatically burning the firmware to the VTMs. In the details pane for VTM Config - 3 or VTM Config - 4, verify that the value of the *`OpState:State`* property is *`Online`*. If the state is *`FW Update`* or *`FW Update Complete`*, do not continue with the remaining steps in this procedure. For information about autoburn, which automatically burns the firmware to the VTMs, see “Enabling and Disabling Autoburn to VTMs” on page 6-3.
4. Right-click **VTM Config - 3** or **VTM Config - 4,** and click **Update Firmware**.
5. In the **Update Firmware on VTM Config -** *n* dialog box, click **Browse** and navigate to the folder in which you saved the *VTMn.nnn*.cab file, typically %ProgramFiles%\Stratus\Firmware\VTM.
6. In the **Open** dialog box, double-click *VTMn.nnn*.cab.
7. Click **Finish** in the **Update Firmware on VTM Config - *n*** dialog box.

   The following message appears, indicating that the firmware update is beginning:

   *`The operation completed successfully.`*

   Click **OK** in the message box.
8. In ftSMC, monitor the value of the *`OpState:State`* property as it transitions to the following values:

- *FW Update*
- *Firmware Update Complete*
- *Primary* or *Secondary*

NOTE

After the firmware is updated, the VTM is rebooted. Rebooting the VTM may take several minutes, during which time the Update Firmware action is not available on the context menu for either of the VTMs. When the reboot is complete, the value of the *OpState:State* property is *Primary* or *Secondary*.

9. When the value of the *OpState:State* property is *Primary*, the firmware update process updates the second VTM. To monitor the progress of the firmware update of the second VTM, select it in ftSMC.

## Enabling and Disabling Autoburn to VTMs

Autoburn ensures that the firmware on the VTM is the same revision as that of the file on the system disk. After the CD-ROM copies the VTM firmware to the system disk, the system automatically burns the firmware if you reboot the system, or if certain events occur to the VTM that cause it to change its state (a rare occurrence).

Autoburn does not occur if you download the firmware file. However, if you manually update the firmware on the VTMs, autoburn ensures that the VTMs stay at that revision until you burn another revision or use the CD-ROM to copy the firmware to the disk.

By default, autoburn is enabled.

**To enable or disable autoburn**

1. In ftServer Management Console (ftSMC), expand **ftServer (Local)**, **ftServer I/O Enclosures**, and **I/O Enclosure - 10**.
2. Expand **VTM Adapter - 3** or **VTM Adapter - 4**, and then click **VTM Config - 3** or **VTM Config - 4**.
3. Right-click **VTM Config - 3** or **VTM Config - 4,** and click **Properties**.
4. Next to Autoburn, select **Enable** or **Disable**.

# Updating the BIOS

**Checklist: Updating the BIOS**

**CAUTION**

Make sure that the system is running in duplex mode. During the firmware update, you must disable each CPU element. The remaining element must be able to keep the system running.

- ❏ In ftServer Management Console (ftSMC), make sure that you can view the system you want to update.
- ❏ Verify the BIOS version numbers. Make sure that the installed BIOS is earlier than the version to which you are upgrading.
- ❏ Ensure that your system contains the files necessary for updating the BIOS by copying the BIOS files to a hard disk on the system.
- ❏ Update the BIOS.

NOTE

Application performance may be negatively impacted while the disabled CPU element synchronizes its BIOS with that on the updated CPU element.

### To verify the BIOS version numbers

1. On the desktop, double-click **ftServer Management Tools**.
2. Expand **ftServer** for the system you are updating, typically **ftServer (Local)**, then expand **ftServer CPU Enclosures** and click **CPU Enclosure - 0**.
3. In the details pane, note the value next to *`BIOS: Version`*.

   For example, *`BIOS: Version Express5800/320Ma BIOS Version 1.0:088`* indicates a 1.0.088 version of the BIOS.

4. Click **CPU Enclosure - 1** or **CPU Enclosure - 2**. Note the value next to *`BIOS: Version`*.

Compare the current BIOS version to the version of the file you are upgrading to.

**Table 6-1. BIOS File Names**

| Platform | BIOS File Name and Location on CD | BIOS Version Number |
|---|---|---|
| Express5800/320Ma | \FIRMWARE\BIOS\ftServer\G94300BIOS.*n.n.nnn*.ROM | *n.n.nnn* represents the BIOS version number |

### To update the BIOS

Perform the following steps to remove a single CPU element from service and update its BIOS, then bring the disabled CPU element online, and enable the system to update the other CPU element.

1. Copy the BIOS firmware file for your system, as specified in Table 6-1, and save it to the following folder:

   %ProgramFiles%\Stratus\Firmware\BIOS\ftServer

2. On the desktop, double-click **ftServer Management Tools**.
3. Expand **ftServer** for the system you are updating, typically **ftServer (Local)**.
4. Expand **ftServer CPU Enclosures**, if necessary, to show the list of CPU enclosures (which represent CPU elements).
5. For each ftServer CPU Enclosure node, make sure that the value of *`Op State:State`* in the details pane is *`Duplex`*. Do not update the BIOS if the value is *`Simplex`*.
6. Right-click **CPU Enclosure - 0** and click **Initiate Bringdown**. Click **Yes** when a message asks whether you are sure you want to shut down the device.

   The following message appears, indicating that the system is taking the enclosure offline:

   *`The operation completed successfully.`*

Click **OK** in the message box.

ftSMC reports the state of the CPU Enclosure as **Removed from Service**.

7. Right-click the same CPU enclosure and click **Update Firmware**.
8. In the **'Update Firmware' on CPU Enclosure - 0** dialog box, click **Browse** and navigate to the folder in which you saved the firmware file, typically in a folder under %ProgramFiles%\Stratus\Firmware\BIOS.
9. Double-click the BIOS file for your platform (see Table 6-1 for the file names).
10. Click **Finish** in the **'Update Firmware' on CPU Enclosure - 0** dialog box. The following message appears, indicating that the system is starting to update the firmware:

    *The operation completed successfully.*

    Click **OK** in the message box.

11. In ftSMC, monitor the value of the *OpState:State* property as it transitions to the following values:
    - *Firmware Update*
    - *Firmware Update Complete*

    Two or three minutes are required to complete the firmware update.

**CAUTION**

Never interrupt a BIOS firmware update in progress (for example, by removing power from the CPU enclosure). Doing so can result in a corrupted BIOS that cannot be recovered and may require replacement of the CPU enclosure.

NOTE

The screen goes blank for approximately one second. During this period, certain devices (such as keyboard, mouse, and a USB floppy drive) are temporarily unavailable. After the devices return to service, you may need to restart any application that was using the floppy drive during the BIOS update.

12. Restart the CPU enclosure: Right-click the CPU enclosure whose firmware you just updated, and click **Initiate Jumpswitch**.

The following message appears, indicating that the system is transferring processing to the CPU enclosure whose firmware you have updated:

*The operation completed successfully.*

Click **OK** in the message box.

13. In ftSMC, monitor the value of the *OpState:State* property as it transitions to the following values:
    - *Diagnostics*
    - *Initializing*
    - *Simplex*

    The system supplies power to the CPU enclosure or element, runs diagnostics on it, and synchronizes its CPU with the online CPU. It then turns off power to the other CPU enclosure or enclosures.

14. Right-click an offline ftServer CPU Enclosure node (for example, **CPU Enclosure - 1** or **CPU Enclosure - 2**), and click **InitiateBringup**.

    The following message appears, indicating that the system is starting to bring the enclosure or element online:

    *The operation completed successfully.*

    Click **OK** in the message box.

15. In ftSMC, monitor the value of the *OpState:State* property as it transitions to the following values:
    - *Diagnostics*
    - *Firmware Update*
    - *Diagnostics*
    - *Initializing*
    - *Duplex*

    The system turns on power to the CPU enclosure or element, runs diagnostics on it, and updates the BIOS if it is different from the online CPU. The system then runs diagnostics on the enclosure again and resynchronizes this CPU.

16. Check that the firmware version for the BIOS shows the new version number.

# Updating BMC Firmware

**Checklist: Updating BMC Firmware**

- ❏ Verify that both BMC devices are online.
- ❏ Verify the BMC firmware version numbers. Make sure that the version on the BMC device is earlier than the version you are installing.
- ❏ Update the BMC firmware.

**To verify that BMC devices are online**

1. In ftServer Management Console (ftSMC), expand **ftServer (Local)**, **ftServer I/O Enclosures**, and then **I/O Enclosure - 10**.
2. Click the **BMC - 120** node. In the details pane, verify that the value next to *`State: State`* is *`Duplex`*. Do not update the firmware if the value is *`Simplex`*.
3. Repeat steps 1 and 2 but expand **I/O Enclosure - 11** instead.

**To verify BMC firmware version numbers**

1. In ftSMC, expand **ftServer (Local)**, **ftServer I/O Enclosures**, and then **I/O Enclosure - 10**.
2. Click **BMC - 120**. Examine the value next to the *`Op State: Reason`* property.

   If the value is *`Primary`*, the BMC in I/O enclosure 10 is online and primary. Go to step 3.

   Otherwise, expand **I/O Enclosure - 11** and repeat step 2.
3. In the details pane of the primary BMC node, note the value next to *`FwVersion`* and following *`Runtime`*. This values indicates the version number of the current BMC firmware.
4. Compare the version number of the current BMC firmware to the version number of the file you are upgrading to. Make sure that you are installing a newer version of the firmware.

Table 6-2 describes the location of the file on the CD and the format of the file name.

**Table 6-2. BMC Firmware File Names**

| Platform | BMC File Name and Location on CD | BMC Version Number |
|---|---|---|
| Express5800/320Ma | \FIRMWARE\BMC\Aria\ G94300SRABMC.*n.n.n*.BIN | *n.n.n* represents the BMC version number |

### To update BMC firmware

Perform the following steps to ensure that your system contains the files necessary for updating the BMC firmware and to update the firmware.

1. Copy the BMC firmware file for your system, as specified in Table 6-2, and save it to the following folder:

   %ProgramFiles%\Stratus\Firmware\BMC\Aria

2. In ftSMC, expand **ftServer Drivers**, right-click **NEC Solutions (America), Inc. IPMI Driver - sraipmi**, and select **Update Firmware**.
3. Enter the path name and file name of the firmware file and click **Finish** to automatically update the primary and secondary BMCs.

   The following message appears, indicating that the system is starting to update the firmware:

   *The operation completed successfully.*

   Click **OK** in the message box.

   It takes approximately five minutes to update each BMC.

   **CAUTION**

   Do not perform any failovers or remove power from the system while the BMC firmware is being updated. If you do, the system may not recognize the BMC devices.

4. To verify that the firmware has been updated for each BMC, search for two system event log entries, number 4233, one for each BMC, that indicate that the firmware burn succeeded. You can also verify that ftSMC displays the new firmware version for the BMC-120 nodes.

   NOTE

   If the BMC firmware update is unsuccessful, you can perform this procedure again **as long as you do not remove the** CPU-I/O enclosure **from the system**. If you have removed the enclosure, you cannot update the BMC firmware yourself. Contact the NEC Technical Support for assistance.

# Chapter 7
# Upgrading Express5800/320Ma Software

For information about upgrading Express5800/320Ma software, see the following:


- “Preparing for Upgrading Systems Over the Network” on page 7-2
- “Overview of the Upgrade Procedure” on page 7-2
- “Breaking the Mirror of the System Volume” on page 7-4
- “Performing the Express5800/320Ma Software Upgrade” on page 7-5
- “Verifying That the Software Upgraded Successfully” on page 7-7
- “Completing the Upgrade” on page 7-8
- “Backing Out of the Upgrade” on page 7-8


NOTE

Be sure to install Windows Server 2003 Service Pack 1 (SP1) before you upgrade to Express5800/320Ma Software Release 4.1.

# Preparing for Upgrading Systems Over the Network

To enable administrators to upgrade Express5800/320Ma over your local network, do the following:

1. On a network share, create a folder and copy the contents of the Express5800/320Ma ExpressBuilder CD (1 of 2) to the folder.
2. In the same folder, create a folder named **ECLSRE**, and copy the contents of the ExpressBuilder CD (2 of 2) to the new folder.

# Overview of the Upgrade Procedure

The upgrade procedure removes the installed release of the Express5800/320Ma software and installs a newer release.

NOTE

During the upgrade, which takes approximately 25 minutes, applications that depend on Microsoft Management Console (MMC) are not available.

The upgrade procedure installs the following:

- Express5800/320Ma software, including drivers, ftServer Manager, ftServer Management Console (ftSMC), and Express5800/320Ma Software Availability Manager (SAM)
- PowerChute Network Shutdown (PCNS) support utility, if the computer is running PCNS

  PCNS is software for using an uninterruptible power supply (UPS) with Express5800/320Ma systems.

- Java 2 Runtime Environment (JRE) for using the Virtual Technician Module (VTM) console
- Adobe Reader

  NOTE

  JRE and Adobe Reader are installed only if the latest supported releases are not already installed on the system.

- Operating system files that are customized for Express5800/320Ma systems
- Express5800/320Ma documentation

**Checklist: Preparing for an Express5800/320Ma Upgrade**

- ❏ Install Windows Server 2003 Service Pack 1 (SP1). The Express5800/320Ma Upgrade Readiness Test for the upgrade procedure checks to make sure that SP1 is installed, and the upgrade cannot proceed if SP1 is not installed.
- ❏ Make sure the system is running Express5800/320Ma Release 4.0.0 or later.
- ❏ Make sure you have a backup boot disk, in case you want to revert to the previous version of Express5800/320Ma.

  If you do not have a backup boot disk, do one or both of the following:

  - If you use volume mirroring, break the mirror on the system disk. See "Breaking the Mirror of the System Volume" on page 7-4 or the documentation for your disk-management tool.
  - If you use Rapid Disk Resync (RDR) to mirror the system disk, deport one of the system disks as described in "Creating a Spare Bootable Hard Disk" on page 3-13.

- ❏ Upgrade the VTM and BMC firmware and the BIOS to the versions on the Express5800/320Ma ExpressBuilder CD (1 of 2). Chapter 6, "Updating Firmware" describes how to upgrade firmware.

  NOTE

  After you upgrade the BIOS, but before you have upgraded the Express5800/320Ma Software, the Device Manager may indicate an unknown device with an warning symbol. You can safely ignore this warning. The problem is resolved when the appropriate video driver is installed with the Express5800/320Ma Software upgrade.

- ❏ If you are using volume mirroring on the system volume, break the mirror. See "Breaking the Mirror of the System Volume" on page 7-4.
- ❏ If the system contains VTMs, use ftSMC to verify that the VTMs are online and running in duplex mode: In ftSMC, do the following:

  a. Expand **ftServer (Local)**, **ftServer I/O Enclosures**, **I/O Enclosure - 10**.
  b. Click **VTM Adapter - 3** or **VTM Adapter - 4**. In the details pane, make sure the value next to *`OpState:State`* is *`Duplex`*.

- ❏ Stop any virus-checking software.
- ❏ Clear application and system event logs, letting Windows save the logs, so that they contain only new events related to the upgrade. To open Event Viewer and clear the logs, click **Start**, point to **Control Panel** and **Administrative Tools**, and click **Event Viewer**. Right-click each listed log file and click **Clear all Events**.

**Checklist: Performing the Express5800/320Ma Upgrade**

❏ Make sure you have the following media available:

- ExpressBuilder CD (1 of 2)
- ExpressBuilder CD (2 of 2)

❏ Upgrade the system software and documentation. See "Performing the Express5800/320Ma Software Upgrade" on page 7-5.

❏ Verify that the software upgraded successfully. See "Verifying That the Software Upgraded Successfully" on page 7-7.

❏ Complete the upgrade. See "Completing the Upgrade" on page 7-8.

NOTE

If you view disks with a disk-management tool during the upgrade procedure, disk slot assignments sometimes appear to change. This occurs because the disk-management tools assign volume names based on the order in which disks are inserted. Therefore, if you remove a disk and then reinstall it later in the upgrade procedure, it may not have the same slot assignment as it had earlier. If you want to ensure that a disk's logical name corresponds to a physical slot number, reboot the system when all disks are installed.

## Breaking the Mirror of the System Volume

If you are using volume mirroring on the system volume, break the mirror before you start the upgrade.

1. Open Windows Disk Management:
   a. Right-click **My Computer** and then click **Manage**.
   b. Expand **Computer Management** and .
   c. Click **Disk Management**.
2. Verify that the volumes on the system disk and its mirror are healthy, dynamic, mirrored volumes.
3. Right-click one of the volume copies in the mirrored system volume and note its Disk Name, such as Disk 1.
4. Click **Break Mirrored Volume**. When you are asked to confirm that you want to break the mirrored volume, click **Yes**.
5. Exit from the disk-management tool.

NOTES

1. To perform this procedure on a local computer, you must be a member of the Backup Operators group or Administrators group on the local computer, or you must have been delegated the appropriate authority. To perform this procedure remotely, you must be a member of the Backup Operators group or Administrators group on the remote computer. If the computer is joined to a domain, members of the Domain Admins group might be able to perform this procedure. As a security best practice, consider using **Run as** to perform this procedure.
2. When you break a mirrored volume, the two volume copies that made up the mirrored volume become two independent simple volumes. These volumes are no longer fault tolerant.

## Performing the Express5800/320Ma Software Upgrade

1. Do one of the following:
   - Browse to a local network share that contains the contents of the Express5800/320Ma ExpressBuilder CD (1 of 2). Open the **bin** folder and double-click **Setup.hta**.
   - Insert the Express5800/320Ma ExpressBuilder CD (1 of 2) into the CD-ROM drive that is located in the enclosure whose power button LED is green-lit.
2. Express5800/320Ma Software Upgrade automatically runs.

   If Express5800/320Ma Upgrade does not automatically run when you insert the CD, on the Windows task bar, click **Start** and then **Run**. Substituting the drive letter of your CD-ROM drive for D, type the following command:

   ```
   D:\bin\setup.hta
   ```

NOTES

1. If, at any point during the upgrade procedure, a dialog box appears with the message *The Target file exists and is newer than the source*, click **Yes**.
2. During the upgrade procedure, the **Progress** dialog boxes may obscure other dialog boxes. If the upgrade procedure appears stalled, move the dialog box and

check for a message box that requires you to click **OK**.

3. You may encounter the **System Settings Change** dialog box during an upgrade. Click **No** each time it appears.
4. Messages indicating that drivers are not signed may appear one or more times when NEC Solutions (America), Inc. PCI adapter drivers are installed. In each case, in response to the query *`Do you want to continue the installation?`*, click **Continue**.

3. Follow the prompts to run the Express5800/320Ma Upgrade Readiness Test, which determines whether your system has the necessary hardware, firmware, and operating system software to install the upgraded version of Express5800/320Ma software. If the system passes the test, go to step 4.

   If the system fails the test, click **View Log** on the **Readiness Test Failed** dialog box to examine the results of the test. Then, perform the necessary tasks to correct the situation and run the Express5800/320Ma Upgrade Readiness Test again.

   - If the log indicates that you must stop the Microsoft Management Console (MMC), close all instances of MMC, including ftSMC sessions and remote MMC sessions.
   - If the BMC or VTM firmware or the BIOS test failed, upgrade the BIOS or firmware. See Chapter 6, “Updating Firmware” for details.

4. When the **Readiness Test Passed** dialog box appears, follow the prompts to upgrade Express5800/320Ma and to remove and install third-party software.

   You can accept the default settings for any third-party software installed during the upgrade.

NOTES

1. If a **Setup Complete** dialog box appears, click **No, I will restart my computer later**, and then click **Finish**. If you restart the system at this prompt, the installation will not complete properly.
2. Be sure to install the third-party software, as NEC Solutions (America), Inc. does not support Express5800/320Ma systems that lack this software.

5. When the **Installation Completed** dialog box appears, click **Restart**.

   Restarting the system activates some of the newly upgraded drivers for Express5800/320Ma systems. You cannot use ftSMC until the system is restarted.

6. After the system has restarted, log on. The Express5800/320Ma Post Installation Check window appears for several minutes. Wait until the Post Installation Check Tool finishes gathering and verifying the information.
7. If the **Installation Completed** dialog box lists warnings or errors, click **View Log**. To find the event that generated the warning or error, search for the word **failed** in the log. When you have resolved the errors, click **Restart** in the **Installation Completed** dialog box.

## Verifying That the Software Upgraded Successfully

After you upgrade, the post-installation verification tool runs to make sure that the upgrade was successful and that the system is restored to full operation.

The post-installation verification tool creates a file named Postcheck*_yyyy_mm_dd_hh_mm*.txt in the %ProgramFiles%\Stratus\Customerservice\Installcheck folder on the system drive. In the file name, *yyyy_mm_dd_hh_mm* indicates the year, month, date, hour, and minute when the file was created.

The post-installation verification tool verifies that:

- Applications for Express5800/320Ma systems are properly installed.
- Correct versions of drivers for Express5800/320Ma systems are properly installed.
- The correct compiled ftServer Managed Object Format (MOF) files are present.
- Services for Express5800/320Ma systems are installed and started, except for services that run only at system startup.
- Third-party applications were installed during the upgrade.
- The system contains the required Microsoft updates (hotfixes).

# Completing the Upgrade

1. The Express5800/320Ma Software upgrade installs a new video driver. Use the Display Properties tool to change the screen resolution to a setting appropriate for you.
2. Relatch all disks. In ftSMC or your disk-management tool, verify that the status of all disks is *Healthy*.
   - If you have been using RDR to mirror disks, the mirror of the system disk automatically synchronizes with the system disk.
   - If you are using a disk-management tool to mirror disk volumes, mirror the partner of the system disk to the upgraded system disk, as described in the documentation for your disk-management tool.

   NOTE

   After you perform this step, you can never reboot the original Express5800/320Ma Software System release from this disk again, nor can you use it to back out to the previous release.

3. Start ftSMC and make sure that all hardware is online and operational.
4. If you have configured the COM1 or COM2 port to function as a modem or as a communications cable between two computers, verify that the ports function as you expect. You may need to reconfigure the COM port after the upgrade.
5. Enter login information again for the Express5800/320Ma Software Availability Manager service. To locate this service, in **Computer Management**, click **Services and Applications** and then double-click **Services**. For more information about entering login information, see how to configure email in the *Express5800/320Ma Software Availability Manager User's Guide*.

# Backing Out of the Upgrade

If you experienced a problem during the upgrade procedure, make note of any messages displayed, contact NEC Technical Support, and back out to the earlier release.

**To back out of an upgrade**

1. Shut down the operating system.
2. Physically remove the upgraded system disk and replace it with the backup boot disk.
3. Restart the operating system.

4. When the system is fully operational, insert the upgraded system disk that you removed in step 2.

   N O T E

   After you perform step 4, you can never reboot from the upgraded system disk again.

5. RDR does not automatically mirror the two disks. Mirror them as described in “Mirroring Disks” on page 3-7.
6. Start all applications to verify that your system and applications are working properly.

# Appendix A
# Connecting a UPS to an Express5800/320Ma System

For information about connecting a qualified uninterruptible power supply (UPS) to an Express5800/320Ma system, see the following:


- "Overview of Connecting a UPS to an Express5800/320Ma System" on page A-1
- "Connecting a UPS to the Express5800/320Ma System" on page A-2
- "Configuring the UPS" on page A-3
- "Installing PCNS on the Express5800/320Ma System" on page A-5
- "Configuring the PCNS User Interface" on page A-6
- "Verifying the PCNS Installation" on page A-7
- "Protecting Against Data Loss after a Medium Power Loss" on page A-8


## Overview of Connecting a UPS to an Express5800/320Ma System

Each Express5800/320Ma system has two power cords that supply power from independent sources. The system continues to run as long as one of the power cords has power. Loss of power to both sides of the system can halt system operations without allowing applications to save data.

When you use a qualified UPS with a system, the UPS provides notification of impending power loss. This notification initiates a controlled system shutdown that preserves application data.

The UPS continues to supply power to the system for a period of time after its input power source is interrupted. Consequently, plugging one side of the system into the UPS output, and plugging the other side of the system into the same power source that supplies the UPS input, provides independent power sources for the two sides of the system.

NEC Solutions (America), Inc. has qualified certain UPS models from American Power Conversion Corporation (APC) for use with Express5800/320Ma systems. See the site planning guide for your system for a list of the supported UPS models.

An APC Network Management Card EX (APC part number AP9617) on these UPS models and PowerChute Network Shutdown (PCNS) on the Express5800/320Ma system enable the system and the UPS to communicate over your network.

**Checklist: Setting Up a UPS and Installing PCNS on Express5800/320Ma Systems**

- ❏ Connect the UPS to the Express5800/320Ma system, as described in "Connecting a UPS to the Express5800/320Ma System" on page A-2.
- ❏ Configure the UPS, as described in "Configuring the UPS" on page A-3.
- ❏ Install PCNS on the Express5800/320Ma system, as described in "Installing PCNS on the Express5800/320Ma System" on page A-5.
- ❏ Configure the PCNS user interface, as described in "Configuring the PCNS User Interface" on page A-6.
- ❏ Verify the installation, as described in "Verifying the PCNS Installation" on page A-7.

## Connecting a UPS to the Express5800/320Ma System

1. On the Express5800/320Ma system, verify that the operating system is shut down, and then power down the system.
2. Plug the UPS input power cord into an AC receptacle connected to utility power.
3. Connect an Ethernet cable to the UPS Ethernet port.
4. Turn on the UPS by pressing the ON switch.
5. Connect the A-side power cords from one or more Express5800/320Ma systems directly to the UPS, or connect the A-side power distribution unit (PDU) to the UPS.

NOTES

1. APC Smart-UPS® models support a single Express5800/320Ma system. APC Symmetra® models support multiple Express5800/320Ma systems.
2. For information about connecting systems or PDUs to the UPS, see the *Express5800/320Ma: Installation Guide*.

# Configuring the UPS

1. Turn on power to the Express5800/320Ma system, and log on to the Windows Administrator account.
2. Verify that the UPS and its management card have been assigned an IP address, and that an Ethernet cable is connected to the UPS and to your LAN. For more information, see the *Network Management Card Installation and Quick Start Manual* from APC.
3. In a Web browser, enter **http://** and the IP address of the UPS (for example, **http://*xxx.xxx.xxx***).

   If Internet Explorer is configured with its default security settings, a message box with the following message is displayed the first time you attempt to configure your UPS with PowerChute software:

   ```
   Content from the Web site listed below is being blocked by
   the Internet Explorer Enhanced Security Configuration.

   http://xxx.xxx.xxx.xxx
   .
   .
   .
   If you trust this Web site, you can lower security settings
   for the site by adding it to the Trusted sites zone....
   ```

   In this message, *xxx.xxx.xxx.xxx* is the IP address of either the PCNS user interface Web page or the UPS management card Web page. Click **Accept** to add this address to Trusted Sites. Make sure that **Active scripting** for Trusted Sites is set to either **Enable** (the default) or **Prompt**. If **Active scripting** is set to **Prompt**, allow scripting when prompted. If you close the message box without adding the IP address to Trusted Sites, you will be unable to configure the UPS.
4. If prompted for a password, supply a valid password for the UPS.
5. In the left column of the **Network Management Card** page, click the name of the UPS.
6. In the left column, click **Configuration**.
7. On the **Configuration** page, use the settings in Table A-1 for the shutdown parameters. Click **Apply** after you modify the settings.

**Table A-1. Recommended UPS Shutdown Parameters**

| Parameter | Meaning | Recommended Setting |
|---|---|---|
| Return Battery Capacity | The minimum battery capacity before returning power to load. | 0% |
| Low-Battery Duration | The time from a low-battery signal until the load is shut down. | 2 minutes |
| Shutdown Delay | The time from when the shutdown command starts until the load is shut down. This time should allow the operating system to completely shut down under application load. You should test the system to measure the time required to shut down. To do so, measure the shutdown time on all systems powered by the UPS. Add 50% to the largest measured value. The Shutdown Delay setting must be at least as long as the computed value to ensure that UPS power remains during a complete shutdown. | 20 seconds (minimum) |
| Return Delay | The minimum time from the return of the AC line to repowering the load. | 0 seconds |
| Sleep Time | The time, in hours, that the UPS sleeps before it restores power to the load. | 0 hours |

8. In the left column, click **PowerChute**.
9. On the **PowerChute network shutdown** page, use the shutdown behavior settings shown in Table A-2. Click **Apply** after you modify the settings.

**Table A-2. Recommended UPS Shutdown Behavior Settings**

| Parameter | Meaning | Recommended Setting |
|---|---|---|
| Maximum Shutdown Time | The time, in minutes, required for the system to shut down. This setting forces a renegotiation if the Low-Battery Duration has changed. Renegotiation may require 10 minutes. | Force negotiation |
| On-Battery Shutdown Behavior | Determines how the UPS is turned on after the system has shut down. This setting turns the UPS back on when the utility power is restored. | Reboot On Line Return |

# Installing PCNS on the Express5800/320Ma System

1. To ensure that PowerChute Network Shutdown (PCNS) registers the correct LAN connection (that is, the one that is registered with the UPS), do the following:
   a. Click **Start**, point to **Control Panel**, and click **Network Connections**.
   b. In the menu bar, click **Advanced**, and then click **Advanced Settings**.
   c. Using the arrow buttons, move the LAN connection that will be registered with the UPS to the top of the list. Click **OK**.
2. Download PCNS from the APC Web site:
   a. Go to the www.apcc.com Web site.
   b. Click **Support** and then click **Software and Firmware**.
   c. Under **Filter by**, select **PowerChute Network Shutdown**, and then click **Free Download**.
   d. Download **PowerChute Network Shutdown v2.*x*.*x* for Windows XP/2000/NT**.

   NOTE

   If your system is running the Japanese version of the Windows Server operating system, you cannot install the English version of the PCNS Release 2.2.1 software. You must install the Japanese version of the PCNS software.

   You are prompted to register before you can download the software.
3. When the download is complete, start the installation program by double-clicking the icon for the file you downloaded in step 2.
4. When the **About** screen appears, click **Next**.
5. Click **I Agree** to accept the licensing agreement.
6. Click **Next** to accept the default installation directory.
7. On the **Choose Install Type** page, click **Typical Install**.
8. On the **Initial Configuration** page, enter the IP address of the UPS management card that is attached to the UPS in the **Management Card IP** field. Accept the default port configurations (**80** for the **Management Card Port #** and **3052** for the **PowerChute HTTP Port #**). Click **Next**.
9. On the **Security Configuration** page, enter the administrator user name, password, and authentication phrase that match the settings on the UPS management card. If you have not changed the default settings in the UPS management card, click **Next**. Otherwise, enter the correct information.
10. Wait while the software registers with the UPS management card. If you see a message that the UPS communicated successfully, click **Next**.

If you see an error message, you can continue the installation, but you must enter the server IP address manually in the UPS management card.

11. In the **View Release Notes?** message box, click **Yes** to view the release notes. Otherwise, click **No**.
12. Click **Finished** to complete the installation.
13. Insert the Express5800/320Ma CD in the CD-ROM drive. The Express5800/320Ma installation program typically starts to gather information about the system automatically, and then displays a **Readiness Test** dialog box.

    Click **Cancel**.

14. On the Windows task bar, click **Start** and then **Run**. Substituting the drive letter of your CD-ROM drive for E, type the following command:

    ```
    E:\PCNS_Support\PCNS_INSTALL.BAT
    ```

15. Click **OK**.
16. Enable the **Do not turn off system power after a Windows system shutdown has occurred** setting:

    a. On the Windows task bar, click **Start** and then **Run**.
    b. To start the Group Policy editor, type the following command:
    ```
    gpedit.msc
    ```
    c. Click **OK.**
    d. Expand **Local Computer Policy**, **Computer Configuration**, and **Administrative Templates**, and then click **System**.
    e. In the details pane, right-click **Do not turn off system power after a Windows system shutdown has occurred**. Click **Properties**.
    f. On the **Setting** tab, click **Enabled** to select it and then click **OK**.

## Configuring the PCNS User Interface

1. Click **Start**, point to **Programs**, click **PowerChute Network Shutdown**, and then click **User Interface**.
2. Log on to the user interface by entering the user name and password that you used in step 9 of the preceding procedure.
3. Click **Configure Events**.
4. On the **Configure Events** page, click the button next to **UPS: On Battery** in the **Shutdown System** column.
5. On the **Configure Shutdown** page, select the **Yes, I want to shutdown the system** check box.

6. Next to **Shutdown the system only when the event has lasted this long**, type **120**. Click **Apply**.
7. On the **Configure Events** page, click the button next to **Communication: Lost while On Battery** in the **Shutdown System** column.
8. On the **Configure Shutdown** page, click the box next to **Yes, I want to shutdown the system** to select it.
9. Next to **Shutdown the system only when the event has lasted this long**, type **10**. Click **Apply**.
10. Optionally, configure other responses to other events. You can specify whether to:
    - Log selected events in the event log.
    - Notify a user when selected events occur.
    - Run a command file when selected events occur.
    - Shut down the system when selected events occur.
11. On the **Configure Events** page, in the menu on the left, click **Configure Shutdown**.
12. On the **Configure Shutdown** page, select the **Turn off the UPS after the shutdown finishes** check box. Click **Apply**.

## Verifying the PCNS Installation

1. Click **Start**, point to **Programs**, click **PowerChute Network Shutdown**, and then click **User Interface**.
2. Log on to the user interface.
3. In the left column, click **UPS Information**, and then click the name of the UPS (for example, **APC-UPS**) to open the management card Web page.
    - If another Web browser opens with the management card Web page, minimize the new browser and go to step 4.
    - If the attempt to connect to the management card Web page fails, you must resolve the network connectivity issue. Consult your network administrator, and see the APC documentation that was shipped with your system.
4. From the PCNS user interface, click **Connected Servers**.
    - If the **Connected Servers** page appears with the correct server domain name and IP address, the installation was successful.
    - If the **Connected Servers** page does not appear, or if the **System Problem Report** page appears, check the communications between the UPS and all of the servers to which it supplies power. Consult your network administrator, and see the APC documentation that was shipped with your system.

# Protecting Against Data Loss after a Medium Power Loss

**CAUTION**

If the system is connected to a UPS, and the UPS briefly loses power and shuts down the system, do **not** push the power button on the Express5800/320Ma system to restart it.

Allow the UPS to restart the system as configured. The UPS automatically restarts the system when power is restored after a power loss. Otherwise, the system may fail to boot and, if it does fail, you will need to reinstall the operating system or you may lose data.

If you push the power button when power is restored after a power loss, you may need to reinstall the operating system if the boot disks are in internal . If the UPS has shut down the system but the UPS has not removed power (because power was only briefly lost), the UPS eventually attempts to restart the system by turning off power to the system and then turning power on. If you have rebooted the system, the UPS interrupts the boot process when it turns off power to the system. This power-on/power-off sequence can corrupt the boot disk. When the UPS turns power back on, the system attempts to boot from the partner boot disk, but because the partner boot disk has an earlier time stamp than the boot disk used in the first attempt, the system fails the boot attempt. The system then attempts to boot from the original boot disk, but this attempt fails if the boot disk was corrupted by the earlier power-on/power-off sequence. If this series of events occurs, you need to reinstall the operating system, or restart the system from a backup system disk.

You may lose data if the boot disks are in external , and internal  contains data disks with mirrored volumes. If a power failure occurs, the volumes will not be synchronized. If the system brings into operation the disks that contain stale data, the (stale) data on the disks is restored and any data received after the loss of power is lost.

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